Purdue Road School

Crack Sealing Technology

Crack Sealing/Filling

- Why
- Pavement & Sealant Selection Process
- When to Seal/Fill
- Equipment
- How

Why You Should Crack Seal

- Extend the Life of Your Pavement
- Reduce Lifecycle Maintenance Costs
- Protect Surface, Intermediate, and Base Courses
- Improve Ride Quality

Why You Should Crack Seal

Loaded Flexible Pavement

“ Cracks are inevitable, and neglect leads to accelerated cracking and potholing, further reducing pavement serviceability.”

(FHWA-RD-99-147)

U.S. Department of Transportation

Federal Highway Administration

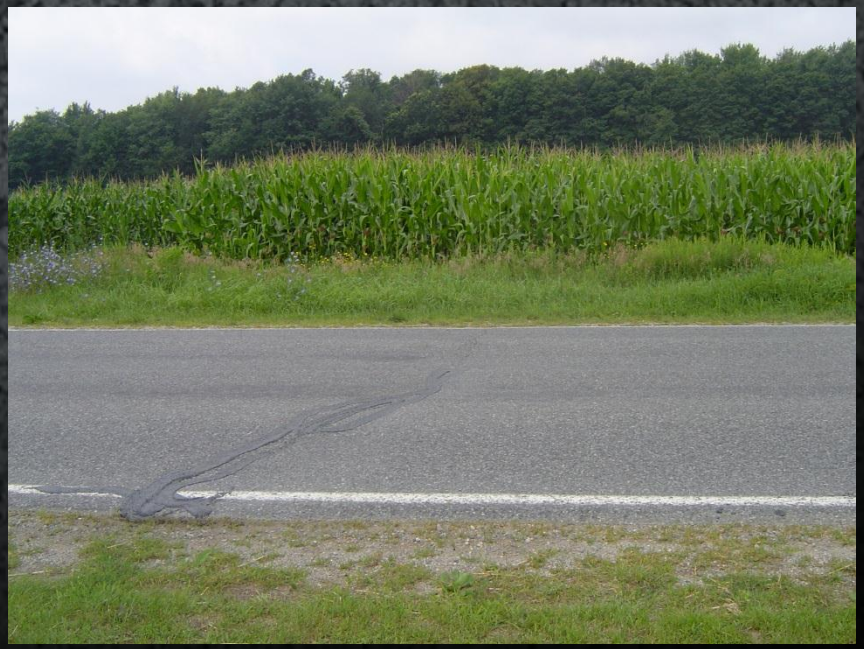
Stop Incompressible/H2O Intrusion

Crack Sealing Extends Pavement Life

- Michigan – 2 to 5 years added to pavement life cycle
- Ontario M.T. – Saves $20,000 / Mile

Pavement Selection

Crack Seal Candidates



Crack Filling Candidate

Crack Filling Candidates

Sealant Selection

Product Selection

Crack sealants and crack fillers need to remain functional over the range of anticipated pavement temperatures.

Crack Sealant - Softer More Flexible

Crack Filler – Stiffer Yet Still Flexible Sealant Resistant to Traffic.

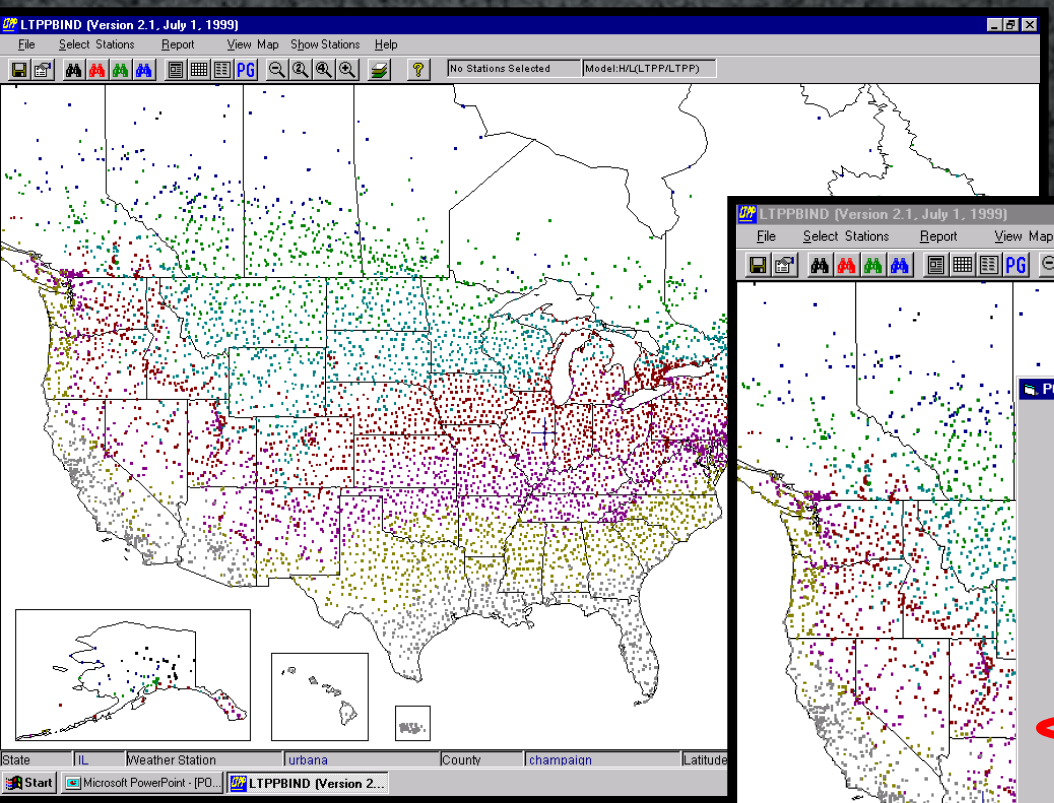
“Crack Sealing” Materials

- Asphalt Rubber
- Rubberized (Polymer Modified) Asphalt Sealants
- Polymer Modified Fiberized Asphalt
- Lower (softer) modulus

“Crack Filling” Materials

- Asphalt Emulsions
- Asphalt Cement
- Fiberized Asphalt
- Polymer Modified Emulsions
- Asphalt Rubber

LTPPBIND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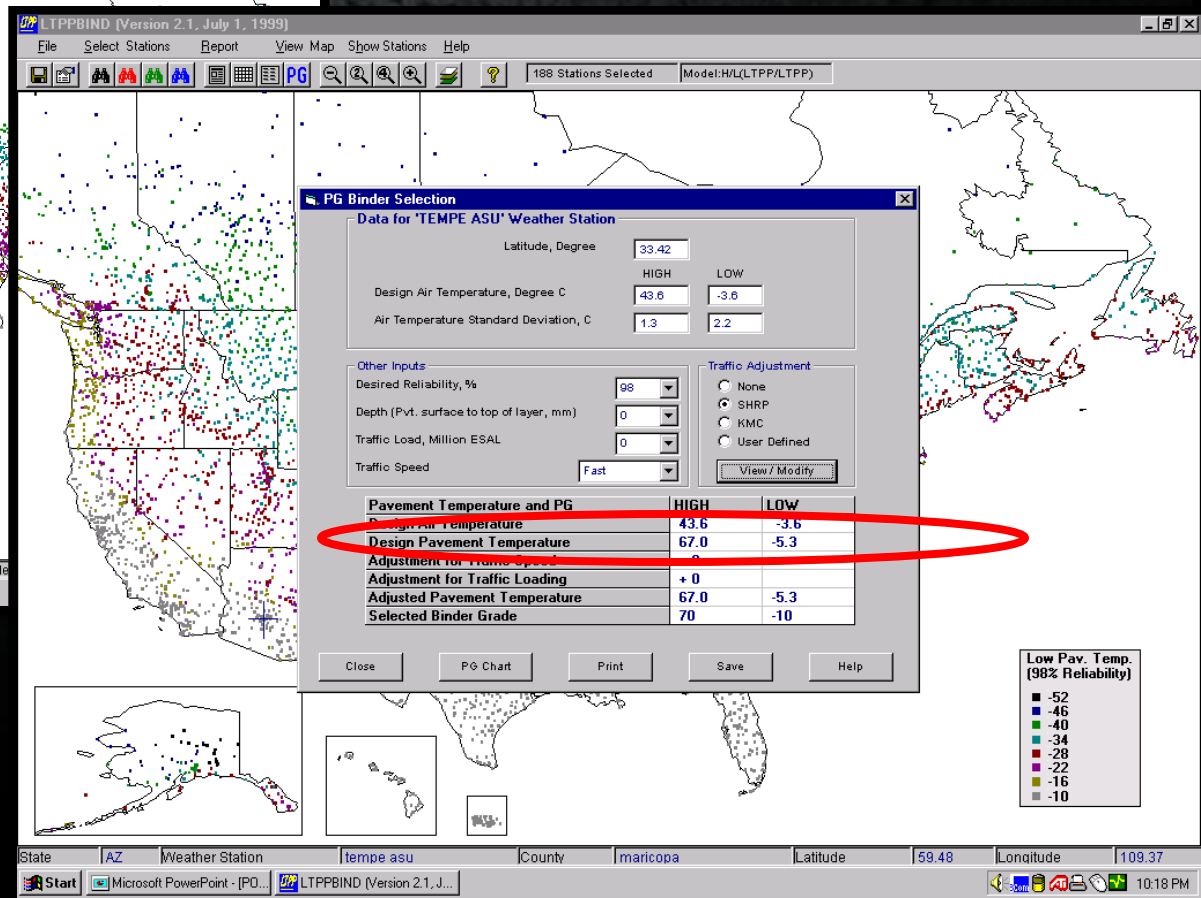
State IL Weather Station urbana County champaign Latitude
Start Microsoft PowerPoint - [PO... LTPPBIND (Version 2...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PG Binder Selection
Data for 'TEMPE ASU' Weather Station
Latitude, Degree 33.42
HIGH LOW
Design Air Temperature, Degree C 43.6 -3.6
Air Temperature Standard Deviation, C 1.3 2.2
Other Inputs
Desired Reliability, % 98
Depth (Pvt. surface to top of layer, mm) 0
Traffic Load, Million ESAL 0
Traffic Speed Fast
Traffic Adjustment
None
SHRP
KMC
User Defined
View / Modify
Pavement Temperature and PG HIGH LOW
Design Air Temperature 43.6 -3.6
Design Pavement Temperature 67.0 -5.3
Adjustment for Traffic Loading + 0
Adjusted Pavement Temperature 67.0 -5.3
Selected Binder Grade 70 -10
Close PG Chart Print Save Help
Low Pav. Temp. (98% Reliability)
-52
-46
-40
-34
-28
-22
-16
-10
State AZ Weather Station tempe asu County maricopa Latitude 59.48 Longitude 109.37
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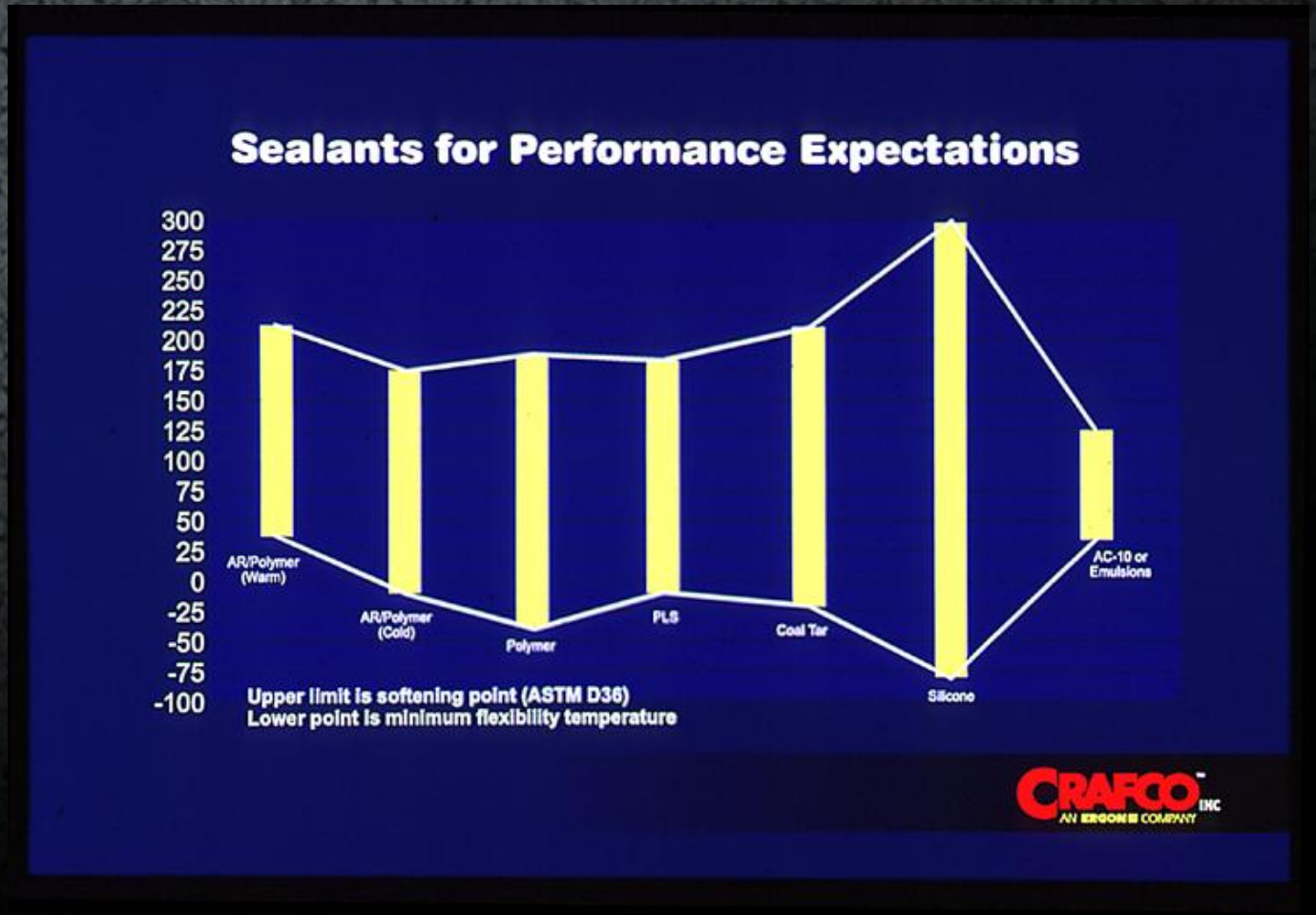
High Point Softening/Low Point Flexibility



Types of products:
Crack Filler
(FHWA-RD-99-147)

- Emulsion and asphalt cement fillers

  -2 to 4 years performance in unrouted non-working cracks

- Rubber- and fiber-modified asphalt fillers

  -6 to 8 years performance in unrouted non-working cracks

Types of products: Crack Sealant (FHWA-RD-99-147)

- Rubberized (polymer-modified) asphalt sealants- 5-9 years performance in routed working cracks

- Rubberized (polymer-modified) asphalt sealants- 2.5-5 years performance in unrouted working cracks

(performance defined as >75% effectiveness)

Hot-Applied Rubberized Asphalt

Is The Most Effective Sealant Reported by 4 Year FHWA Study

Sealant serviceability range:

Low cost sealant:

≈ 30°F --- to --- ≈ 100°F (70° Range)

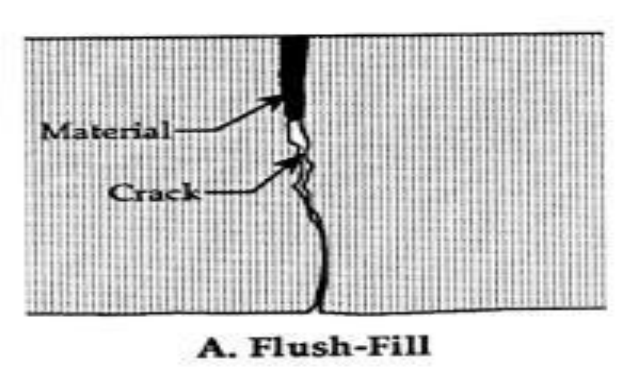
Higher cost, higher performing sealant:

≈ -20°F---------- to ---------- ≈ 110°F

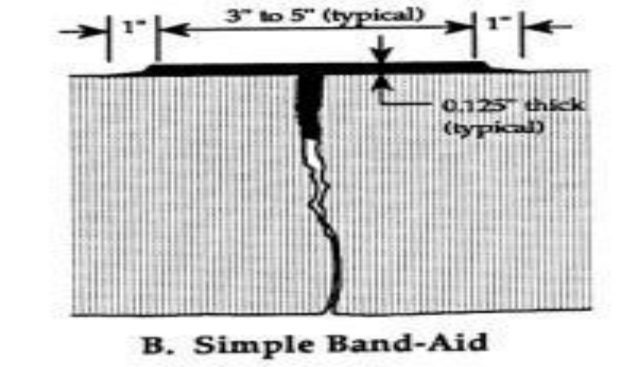
(130° Range)

Only $100-$200/lane mile more for higher performing sealant

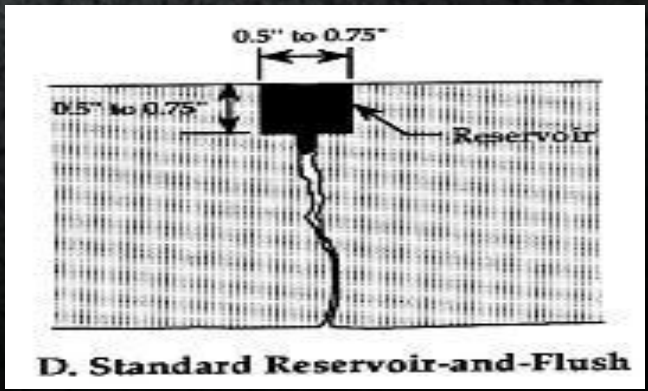
How Should Sealant Be Applied?



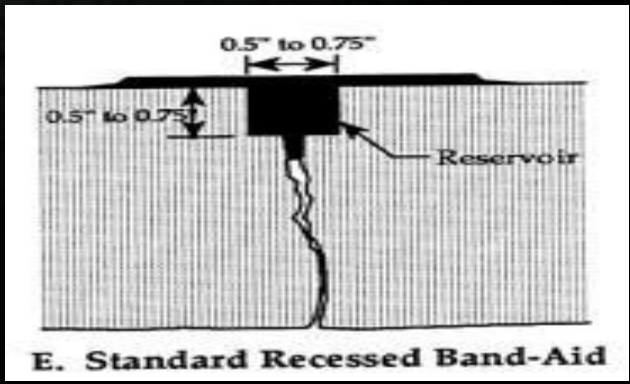
A. Flush-Fill



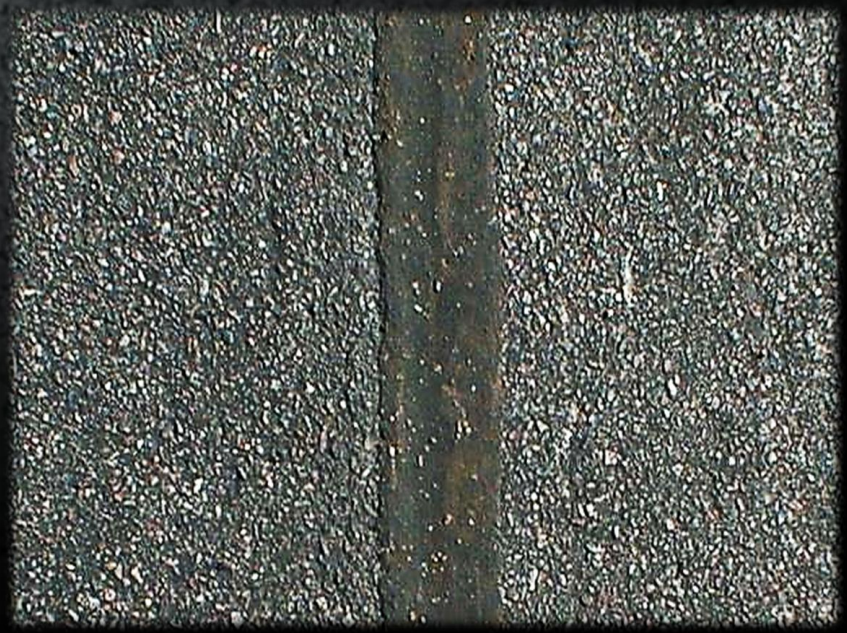
B. Simple Band-Aid



D. Standard Reservoir-and-Flush



E. Standard Recessed Band-Aid



Costly mistake…

Improper sealant selection for climatic or pavement conditions

Too Stiff- premature material cohesive or adhesive failure

Too Soft- traffic pull ups and tracking

Incorrect or Ineffective Results

CRAFCO INC
AN ENGINEERED COMPANY

When to treat cracks?

Best Time

- Ambient conditions 40°F(5°C) – 60°F (16°C) - cracks mostly or completely open, more material can be applied in crack reservoir.

- Materials exist for year around sealing - Each area should adjust material selection for the climate.

Equipment

Hot Air Lance

Compressor

Equipment System

- Jim Lippert
- JLL@Crafco.com
- Crafco, Inc. & Deery American
- 602-317-4999